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| Date | Time | Class/Set | | Lesson No | No. in class | Room |
| 3/5/19 | 11.30 | 10 S1 | | 1 of 10 | 29 | 2.24 |
| **Your targets from weekly training meeting relevant to this lesson (foci)** | | | | | | |
| TS2 / TS5 – Adding support for LAPS and those students finding work more challenging  TS3 – Ensure you are aware of what prior knowledge students have and how it impacts on their learning  TS7 – Developing 1-1 techniques for support and ‘pre sanction’ action | | | | | | |
| **Background of the class context of your teaching and learning plan and your expectations** | | | | | | |
| New topic.  Last covered magnetism in Yr 8 Term 1 – so along time ago – need to remind and refresh so they can recall  Set is top level combined science class | | | Additional Adults: | | | |
| Relevant Curriculum Statements | | | | | | |
| 12.1 Recall that unlike magnetic poles attract and like magnetic poles repel  12.2 Describe the uses of permanent and temporary magnetic materials including cobalt, steel, iron and nickel  12.3 Explain the difference between permanent and induced magnets | | | | | | |
| **Pre-supposed knowledge / Possible Concepts / Misconceptions / Alternative Ideas** | | | | | | |
| KS3 have learnt about which materials are magnetic, poles attracting and repelling and how a compass works.  Misconceptions might include:   * All metals are attracted to a magnet. * All silver coloured items are attracted to a magnet. * All magnets are made of iron. * Larger magnets are stronger than smaller magnets. * A magnetic field is a pattern of lines (not a field of force) that surrounds a magnet. * In a magnet, the magnetic field lines exist only outside the magnet. | | | | | | |
| **Learning points:** | | | | | | |
| Overall: What is magnetism | | | | | | |
| Bronze: Recall what happens when poles meet | | | | | | |
| Silver: Define the terms permanent, temporary and induced magnets | | | | | | |
| Gold: Describe the use of magnets | | | | | | |

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| **Time** | **Teacher Activity**  What are you doing? Additional adults in room? | **Pupil Activity**  that are the pupils doing? **Evidence of progress? Refer to Learning Points.** |
| 11.30 | Starter Activity  True false quiz based on KS3 lessons  Include brain graphic and key movie images (dr Strange, Fantastic beasts, Moana, Rogue One) from Yr 8 to demonstrate they can remember other things from 2016.  Use as a way to assess what has been remembered – and to address any misconceptions.   1. All metals are attracted to a magnet. 2. Silver is a magnetic material. 3. Iron is a magnetic material. 4. It is possible to turn a magnetic material into a magnet 5. Magnets have three poles 6. The South pole of a compass is attracted to the North pole of the earth 7. Nickel is a magnetic material 8. All silver coloured metals are attracted to magnets 9. The geographic north pole is the magnetic south pole   Challenge: How can you test if a substance is magnetic? | Pupils doing starter task  Pupils answering starter true and false  Pupils attempting challenge question |
| 11.40 | **Bronze: Recall what happens when poles meet**  What will happen – attract or repel – why?  Pair share short discussion  Choose a low performing table to confirm rule and top performing table to help if needed.  Give 4 examples on worksheet – students write attract or repel  Reveal answers - Students to hold up MWB with (honest score) – probe and clarify if needed  Challenge: What do you think is meant by the term ‘induced magnet’? | Pair discussion (I expect this to be pretty straightforward)  Students to complete worksheet – so they have the key concept in Yr 10 book not Yr 8. |
| 11.45 | Horse shoe magnet demo.  Student to try and pass steel knife through  Teacher to use aluminium knife  Students to explain  1 slide with all metals listed as Element symbols  Students told 3 are magnetic – can they remember which?  Write list in Green books and pencil circle the magnetic ones  Reveal 3 correct ones and green pen correct  Challenge: What might be the difference between a permanent and an induced magnet? | Pick who ever is in a good mood that day  Random pick of a low performing student to explain – offer out to help for a positive if needed.  Students then to refresh their memories about which metals are magnetic as will be needed for the gold activity |
| 11.50 | **Silver: Define the terms permanent, temporary and induced magnets**  Bar magnet – paperclip practical  (How long a chain can you create?)  Questions to think about.  What is happening to the paperclips?  Are the paperclips magnetic all the time?  What metal must the paperclips contain?  Support: Which metals are magnetic, Look at the bar magnet image  Challenge: What do the magnetic poles on the paperclips look like? | Students to work in pairs and then, once equipment collected have around 5 mins to try to make as long a chain as possible.  Students to answer questions in their rough books.  Use bounce to get discussion going re science behind the practicals. |
|  | Post practical (MWB) activity to try and think about defining Permanent and Induced magnets.  How would you describe a permanent magnet and an induced magnet?  Support – The bar magnet is a permanent magnet and the paperclips are the induced magnet | Students to use practical, discussion, English knowledge and support statements to attempt to define permanent and induced magnets |
|  | Green pen activity to match definitions to words  Permanent magnet  Temporary magnet  Induced magnet  Challenge: How is magnetism used to store data on computer disks? | Students to match statements in science books to create revision notes |
| 12.05 | **Gold: Describe the use of magnets**  Pair and share discussion on   1. Where magnets are used in everyday life 2. How the magnetic properties are used   Support: Think back to lessons from Yr8. Small images of computer disk, car door lock, headphone, electrical motor, maglev train, doorbell, fridge door, scrap metal crane | Pair and share. Students to use knowledge and support pictures to list where magnets are used on MWB |
|  | Green book – Explain how magnetism can be used in a recycling plant to separate aluminium drink cans from steel food cans.  Support: Remind yourself which metals are magnetic  Challenge: Why are electro magnets used rather than permanent magnets? | Students to use knowledge of magnetic properties of metals and types of magnetism to explain |
| 12.15 | Plenary / Prep (as they have some exam questions) most questions can be answered from lesson and lessons covered in Yr 8 and Yr 9  Wordsearch |  |
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| **Evidence of Pupil Progress**   1. Able to answer random questions 2. Answers on MWB 3. Worksheets 4. Written tasks | | |

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| **Resources needed**:  Magnet / knives for demo  Bar magnets and paperclips for practical |
| **Health and Safety issues and Risk Assessment**:  N/A |
| **Homework set:** |

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| **Evaluation (**after every lesson**)** |
| **Strengths / Areas for Development** |
| **Evidence** |
| **Actions for future plans** |
| **Reflection** (once per week**)….** |